ABSTRACT

Reactive power (VAR) consumption in a power plant or facility having synchronous machines is adaptively controlled in an automated manner. Electrical parameters of the plant are dynamically monitored during plant operation, and the overall plant power system is brought to an optimum operating point under control of a microprocessor-based power measurement system. The microprocessor-based power measurement system adaptively changes the excitation system of synchronous machines in the plant based on results of monitoring. The excitation systems of the synchronous machines may be adjusted to be constant bus voltage, constant reactive power, or constant power factor, according to optimum system performance requirements. The power measurement system also assists in avoiding problems in voltage regulation during increased load demand conditions, such as when starting large electrical motors or energizing large transformers in the system.